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the student with the means of following up the literature of any subject as thoroughly as he may be inclined. The figures are numerous, new, and admirably fitted to illustrate the points for which they are intended. Altogether, the book is well suited for the wants of beginners, to whom the size and abstruseness of the larger works on petrography are often discouraging; and it will doubtless find many readers in this country as well as in Europe. It would abundantly repay translating into English.

SIMON'S MANUAL OF CHEMISTRY.

THIS book, as the preface informs us, is intended as a guide to lectures and laboratory work for beginners in chemistry, being especially adapted for the use of pharmaceutical and medical students. It is hard to see, however, in what respects pharmaceutical or medical students need special methods of treatment in their commencement of the study of chemistry before they enter upon a study of those particular branches of the science especially necessary to them in their profession.

A peculiar feature of the book is the presence of seven colored plates, showing the variously shaded colors of the more common chemicals, and their color-reactions; such as the red of mercuric iodide, the yellow of arsenious sulphide, the shades of color produced by the action of reducing-agents on a solution of potassium dichromate, etc.,—a feature which can possess little value to a laboratory student, who must necessarily become familiar with these colored substances and their reactions by personal experience. The book, however, bears the appearance of being intended for students who are to have but little laboratory work; and, indeed, with the exception of the portion treating of metals and their combinations, it cannot be considered as a really good text-book for laboratory use.

There is noticeable, moreover, throughout the book, an apparent lack of connection between fact and theory. The facts are given, but the theory is lacking. When supplemented by lectures, this defect might not be so noticeable. It is, however, a point to which the student's attention needs to be constantly called. Chemistry is more than a collection of facts: it is a living science. Facts serve as a basis upon which to build theories; and the mutual connection of fact and theory needs to be constantly indicated, as well as the meth-

ods of reasoning by which the theoretical conclusions are reached.

The book, however, possesses some admirable features. As a whole, it is well written, is systematic, and contains much that is valuable. Its main defect as an elementary text-book consists in the attempt to cover too great a variety of subjects at the expense of thoroughness. Critical examination, moreover, reveals here and there an occasional incorrect or misleading statement. Thus, on p. 358 we are told that "ptyalin, the active principle of saliva, is a ferment which has the power of converting starch into glucose," whereas it has been known for the last five years that the main product of the amylolytic action of saliva is maltose. The method for the determination of nitrogen, given on p. 241, can hardly be considered as the method generally used for this purpose, as is claimed by the author; neither can the method, given on the same page, for the determination of carbon and hydrogen "by passing dry oxygen gas over the substance heated in a glass tube," be taken as a satisfactory statement of the method generally used for making a 'combustion' in oxygen gas. Again: we are told on p. 359 that pepsin, in the presence of free hydrochloric acid, does not prevent the continued action of saliva on starch, whereas it has been plainly demonstrated within the last three years that the ferment of saliva is completely destroyed by gastric juice, and even by dilute hydrochloric acid alone.

NEW TEXT-BOOKS OF PHYSICS.

MR. GAGE states his aim to be, "to collate in this volume something of value to every teacher of physical science." The book is divided into five parts: laboratory exercises, manual of manipulation, general review of physics, test-questions, and key to solution of problems. The experiments given in the first part are mostly well enough, and some of them even of considerable ingenuity. They are, however, numbered in a minute fashion, which is likely to mislead one who reads in the announcement that there are two hundred and thirty-eight experiments. In the forty-five pages devoted to the 'manual of manipulation,' very few directions for manipulation

Physical technics, or, Teacher's manual of physical manipulation, etc. By ALFRED P. GAGE, A.M. Boston, Author, 1884. 200 p. 8°.

Problèmes de physique de mécanique, de cosmographie, de chimie. Par EDMÉ JACQUIER. Paris, Gauthier-Villars, 1884. 6 + 271 p. 8°.

Manual of chemistry. By W. SIMON. Philadelphia, Lea's son & Co., 1884. illustr. 8°.

are given, and these few are not all that could be desired. This 'manual of manipulation' is mostly given up to the discussion of such topics as 'units of mass and force,' 'inertia,' 'corpuscular theory of heat,' 'what is electricity?' etc., closing with several pages of 'odds and ends.' In short, this part is any thing but a manual of manipulation: it is rather a dumping-ground for the disconnected contents of one of the author's note-books. The test-questions and solutions to problems in the author's 'Elements of physics' fill the remainder of the little volume, and will, without doubt, be of value to those teachers who use his earlier book.

The book will prove a disappointment to most teachers. It is really a supplement to Mr. Gage's 'Physics,' but the matter which it contains should have been reserved for use in the preparation of a second edition of that work.

The 'Problèmes de physique' of Jacquier is too meagre for a text-book, too full for a mere collection of problems. It is probably intended to supplement a course of lectures. The reader who is familiar with the ordinary elementary text-books of physics will find little really new or inspiring here, but rather the old, more or less satisfactory demonstrations, without the calculus, of the laws of centrifugal force, the simple pendulum, the flow of liquids from an orifice, the foci of lenses, etc., presented as the solutions of problems. The ordinary student would find this very tedious. The part devoted to heat, with its uncompromising applications of 'binômes de dilatation,' etc., would be salutary exercise, perhaps; but it reminds one of the 'school of the soldier.' We can imagine no one but an enlisted man going through it. Of course, it would be unfair to imply that the author has in no point improved upon the work of other makers of elementary books. His second proof of the law of centrifugal force almost avoids the familiar assumption that unequal things are equal; and his page devoted to showing how the one fluid theory accounts for electric attractions and repulsions would be new and interesting to many readers.

The book concludes with a collection of a hundred and seventy-one 'problems for solution,' given without answers. These, with the exception of seventeen which deal with chemical equivalents, are of about the same character as the problems in the last edition of Everett's 'Deschanel,' and will possibly be welcomed by the weary makers of examination-papers.

NOTES AND NEWS.

MR. ALEXANDER AGASSIZ's resignation of his position as a fellow of Harvard college was naturally accepted by the corporation with great reluctance. The *Bulletin* of the university just published contains the formal votes taken at the meeting of Oct. 24, which state "that the wide range of his sympathies and interests, the confidence and affection which he inspired, and the varied information which he possessed both as a man of business and as a man of science, made his services as a fellow of singular value to the university; that his great gifts within the past thirteen years to the scientific departments, and especially to the Museum of comparative zoölogy, which amount to more than half a million of dollars, make him one of the chief benefactors of the university, and entitle him to its profound gratitude."

—The *Harvard university bulletin* for January contains a further instalment of Mr. Winsor's collation of the Kohl collection of early American maps, and the beginning (267 numbers) of another of Mr. Bliss's valuable indexes to map literature, in which the various publications of the London geographical society, together with the two principal London geographical journals, — *Ocean highways* and the *Geographical magazine*, — are treated in the same manner as he formerly indexed *Petermann's mittheilungen*. It will prove exceedingly convenient.

—The Ottawa field-naturalists' club makes a rather remarkable showing for so young a society. It has a membership of about a hundred and fifty, and an annual fee of a dollar. It has just published the fifth number of its Transactions, a pamphlet of a hundred and fifty pages, and yet has no debt. The pamphlet contains some matter of a general interest, particularly an article by Mr. W. P. Lett on the deer of the Ottawa valley, — the moose, caribou, wapiti, and Virginia deer, — and one on phosphates by Dr. G. M. Dawson.

—A course of twelve lectures on geology will be given on Thursday afternoons during February, March, and April, beginning Feb. 12, by Prof. Daniel S. Martin, at No. 58 West Fifty-fifth Street, New York. These lectures are designed especially, though not exclusively, for ladies, and are held in the building occupied by Rutgers female college.

—The Saturday lectures during February and March, under the auspices of the anthropological and biological societies of Washington, will consist of the following: Professor John Fiske, Results in England of the surrender of Cornwallis; Dr. George M. Sternberg, U.S.A., Germs and germicides; the Hon. Eugene Schuyler, The machinery of our foreign service; Mr. William T. Hornaday, Natural history and people of Borneo; Mr. Charles D. Walcott, Searching for the first forms of life; President E. M. Gallaudet, The language of signs, and the combined method of instructing deaf-mutes.

—The *Records* of the Geological survey of India, vol. xvii. part iv., contains a paper on Mr. H. B. Foote's work at the Bilba Surgam caves, in which the